

Union Pacific Railroad Rochelle Intermodal Facility

Westerly Grade Crossings Traffic Impact Study

January 2003

Carter Burgess

I. Purpose and Need

The Union Pacific Railroad Company proposes to construct a Rail/Truck intermodal facility southwest of Rochelle, Illinois in the area generally bounded by the existing mainline of the railroad, the Kyte River, Gurler Road, and the existing Del Monte facility. The facility will provide for the loading and unloading of intermodal containers onto and off of trains, and will include a switchyard, container lifts, short-term container storage, truck staging and loading areas, and support facilities. To accommodate rail traffic to and from the facility, lead tracks will be constructed from the facility to a point just west of Brooklyn Road.

As part of the project, the existing grade crossing at Brush Grove Road has been closed. West of the facility, two additional lead tracks will cross Thorpe and Grange Road, and one additional lead track will cross Brooklyn Road. A significant number of switching movements will result in frequent blockage of the Thorpe Road and Grange Road crossings. Additional movements at the Brooklyn Road crossing will generally be limited to the freight traffic having a destination at the intermodal facility. In addition, the railroad anticipates the facility will generate an increase in rail traffic on the mainline, further increasing the number of daily blockages of the westerly grade crossings.

While the traffic volumes on Brush Grove, Thorpe, Grange and Brooklyn Roads are relatively low, the combined effect of the increased number of tracks and increased train movements indicated a need to further study traffic patterns in the area for the purpose of developing a set of recommendations for any road improvements that may be needed as a result of the construction of the intermodal facility.

II. Existing Conditions

A. Roadway Network

The existing roadway network is depicted on Exhibit 1. Interstate 88 and Illinois Routes 38 and 251 are improved all-weather roads. Other roads depicted on the exhibit can be characterized as either gravel or chip-and-seal pavements. Of the roads in the primary study area, Meridian and the easternmost half-mile of Gurler have gravel surfaces. The remaining roads have a chip-and-seal surface and are generally posted with weight limits during the Spring thaw. Grange Road is a Class III truck route between IL-38 and the UPRR.

North-South routes Meridian, Brooklyn, Thorpe and Brush Grove all cross Interstate 88 above grade with no access. Meridian, Brooklyn and Thorpe all are continuous through the study area and extend well to the south. These three roads also provide a link to IL-38 at the north edge of the study area. Thorpe Road connects to IL-38 via a sharp 90-degree curve to the west.

East-West routes through the study area (other than I-88 and IL-38) have many discontinuities, primarily due to the diagonal crossings of I-88 and the UPRR. Of particular concern is the lack of any east-west link between Brooklyn and Grange south of the UPRR and north of I-88. This gap tends to form a barrier to traffic from the west and isolates the properties east of Brooklyn Road.

Topography in the area is generally flat. The natural drainage has been improved by the construction of a network of drainage ditches by the Brush Grove Drainage District. The UPRR mainline is generally three to four feet above the surrounding grade.

B. Adjacent Land Use

Outside the city limits of Rochelle, northeast of the study area, land use is generally agricultural, with occasional farmsteads and a few isolated businesses. According to the *Ogle County Amendatory Comprehensive Plan Year 2000 Update*, future land uses will remain primarily agricultural with the following exceptions:

- The UPRR Intermodal Facility.
- Residential development is planned in the area east of IL-251 and South of I-88.
- Industrial Development is planned in the area west of the City of Rochelle and South of the Burlington Northern Railroad, along the IL-38 corridor.

The Lee County Comprehensive Plan projects continued agricultural use of the land in the project area, with the following exceptions:

- Continued moderate residential growth in Ashton and Steward.
- Planned development in the area from Steward to the county line and from one-half mile west of IL-251 to one and one-half miles east of I-39.

These development patterns are oriented toward existing arterial highways, including IL-38, IL-251, I-88 and I-39. Those routes will bear the brunt of additional traffic resulting from new development in this area.

C. Traffic

Existing traffic volumes, based on counts taken by the Flagg Township Highway Department in October of 2000, are shown on Exhibit 2. Of the four grade crossings to be directly impacted by the intermodal facility, Brooklyn Road carries by far the most traffic. This would be expected, due to its long continuity and good pavement surface. All roads in the area carry relatively low volumes and operate at high levels of service. Because of the lack of development adjacent to the roads in the immediate study area, traffic growth is expected to continue at a very low rate.

Other than maintaining access and minimizing impacts to established travel patterns, the principal traffic concerns include safety of school buses and emergency vehicles, and the ability for farmers to haul grain to local elevators, and move equipment. During the spring thaw, load limits on many township roads restrict routes farmers may use to take their grain to market.

III. Traffic Impacts of Proposed Facility

The traffic impacts of the intermodal facility can be characterized into four different areas:

- Construction Impacts
- Direct Impacts
- Rail Traffic Impacts
- Induced Development Impacts

Impacts due to construction traffic are temporary in nature and can be controlled to a great extent. The contractor for the facility, Ragnar-Benson, and the UPRR, have publicly stated that all construction traffic will enter and leave the facility via the construction entrance at the southeast corner of the site, which connects directly to IL-251. Based on these commitments, no construction traffic impacts are anticipated on the roadways in the study area.

Traffic impacts due to construction of the lead tracks west of the facility have the potential to be significant. New lead tracks will be added at Thorpe Road (two tracks) Grange Road (two tracks) and Brooklyn Road (one track). Grade crossings must be closed during construction of the new crossings. If all of the crossings were closed simultaneously, significant adverse travel distances would result, seriously impacting local residents and businesses.

Direct impacts include additional traffic due to employment at the facility, as well as truck traffic entering and leaving the facility. Due to the nature of the facility, all but a handful of the daily truck traffic will be directed toward IL-251 and ultimately, I-88. The railroad anticipates that in the year of opening (2003) approximately 950-1,100 trucks per day will enter and leave the facility. By 2023, this figure is expected to increase to 2,000-2,200 trucks per day. We expect that no more than 5% of these trucks will enter and leave the facility using the remaining portion of the existing Brush Grove Road alignment south of the facility. Brush Grove Road will be realigned to serve as the southern access road for the facility with the primary entrance being at IL-251. Direct employment at the facility (other than truck drivers) is anticipated to be approximately 150. Of these, 10% are expected to utilize the remaining portion of the existing Brush Grove Road alignment while coming from the West on their daily commute. Projected traffic volumes, based on the existing roadway configuration, are shown on Exhibit 3. Even with the anticipated growth, projected traffic volumes are well within the capacity of the existing roadway network.

Rail traffic impacts result from increased train movements, both through trains and switching movements. Rather than increasing traffic, these impacts increase delays by blocking grade crossings. Switching movements in particular can cause large increases in delay if the movements are frequent, as expected at this facility. These delays can have a significant impact on emergency vehicle response times.

Another significant impact of increased rail traffic is grade crossing safety. New lead tracks for the facility will increase the number of tracks at Thorpe Road and Grange Road to four tracks each, and Brooklyn Road will have three tracks. Of further concern is the fact that these tracks will have a mixture of high and low speed trains. Multi-track crossings greatly complicate driver decision-making and can lead to higher accident rates, even with active grade crossing protection.

With the relatively low traffic volumes, even combined with a high frequency of train movements, the overall vehicular delay will be relatively low, compared with the more urbanized areas of the state. A related concern is adverse travel distance. Frequent blockage of the Thorpe and Grange Road crossings may cause drivers to alter driving patterns to use the Brooklyn Road crossing. For traffic that originally would have used the Brush Grove Road crossing, this detour could add up to four miles to the trip, leading to travel time delays, and increased vehicle operating costs. An additional concern is grade crossing safety. With three grade crossings in close proximity, and a mixture of high and low speed trains on three and four-track crossings, there is a significant potential for grade crossing accidents, particularly for school buses and other large vehicles.

IV. Potential Improvements

A number of potential improvements, alone or in combination, could mitigate the traffic impacts of the intermodal facility. These could include improvements in grade crossing protection, grade separations, crossing closures, and other road improvements designed to improve network connectivity or accommodate increased traffic volumes.

Grade Crossing Protection

There are several possible levels of crossing protection available for use at grade crossings. The simplest form, the crossbuck, is currently in use at the Grange Road crossing. The next level is flashing lights, then flashing lights with crossing gates, then cantilever mounted flashing lights with gates, and finally, four-quadrant gates. The last two types are typically used only on urban multilane roadways. On rural, low-volume roads such as those in the study, the highest level of protection typically provided is flashing lights and gates. If all of the crossings are to remain at grade, this level of protection would be recommended.

Grade Crossing Closure

Purely from a safety standpoint, this is the second most desirable solution. Adverse travel distance may cause this option to be less desirable from an economic standpoint, however. Given the spacing of grade crossings and existing traffic volumes, the Grange Road and Thorpe Road crossings are candidates for closure.

Grade Separation

Construction of a roadway overpass eliminates potential vehicle/train accident conflicts, but is very expensive. Given the low traffic volumes on the roadways in the study area, no more than one grade separation can be economically justified. The bridge could be located either at Brooklyn Road or Thorpe Road. Locating the bridge at Grange Road would be difficult due to the proximity of Titus Road to the Railroad Tracks and the location of the Consolidated Grain elevator. Relative advantages of each location are enumerated in the following table.

Brooklyn Advantages

Carries highest traffic volume – adverse travel for fewer vehicles

Shorter bridge due to presence of only three tracks

Thorpe Advantages

Lower adverse travel distance for vehicles east of Brooklyn Road crossing

Eliminates additional cost of large box culverts which would be required at Brooklyn to accommodate drainage

Brooklyn Road could remain open, since relatively few additional railroad movements will be present at that location.

Provides a safe crossing for all traffic in the area with a maximum of one mile of adverse travel

Gurler Road Extension

The half-mile gap in Gurler Road between Brooklyn Road and Grange Road creates a significant barrier to east-west traffic and limits travel options to area drivers. There are currently no continuous east-west routes between I-88 and IL-38 in this area. Completion of this link, in conjunction with other improvements planned as part of the development of the intermodal facility, would greatly improve roadway connectivity and allow more vehicles to utilize a future grade separation, regardless of its location.

V. Recommendations

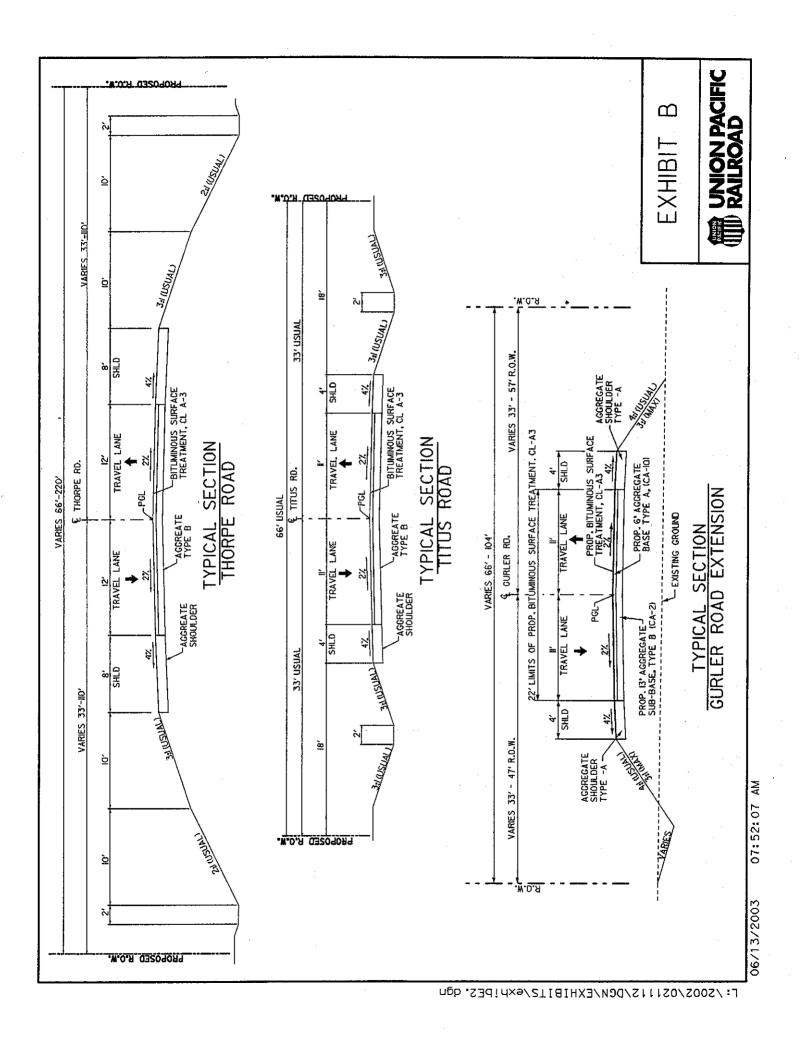
Due to the significant accident potential and significant delay expected due to frequent blockage of the crossings, it is recommended that a grade separation structure be built at either Brooklyn Road or Thorpe Road. As indicated above, the Thorpe Road location's advantages outweigh those at the Brooklyn Road site. With the construction of the grade separation, the Grange Road grade crossing should be permanently closed. This will virtually eliminate the potential for vehicle/train conflicts due to switching movements and will significantly enhance the railroad's operational flexibility. Because the Brooklyn Road crossing is outside the area where switching operations will take place, that crossing may remain open. The existing flashing signals and gates have been relocated to accommodate the proposed lead track.

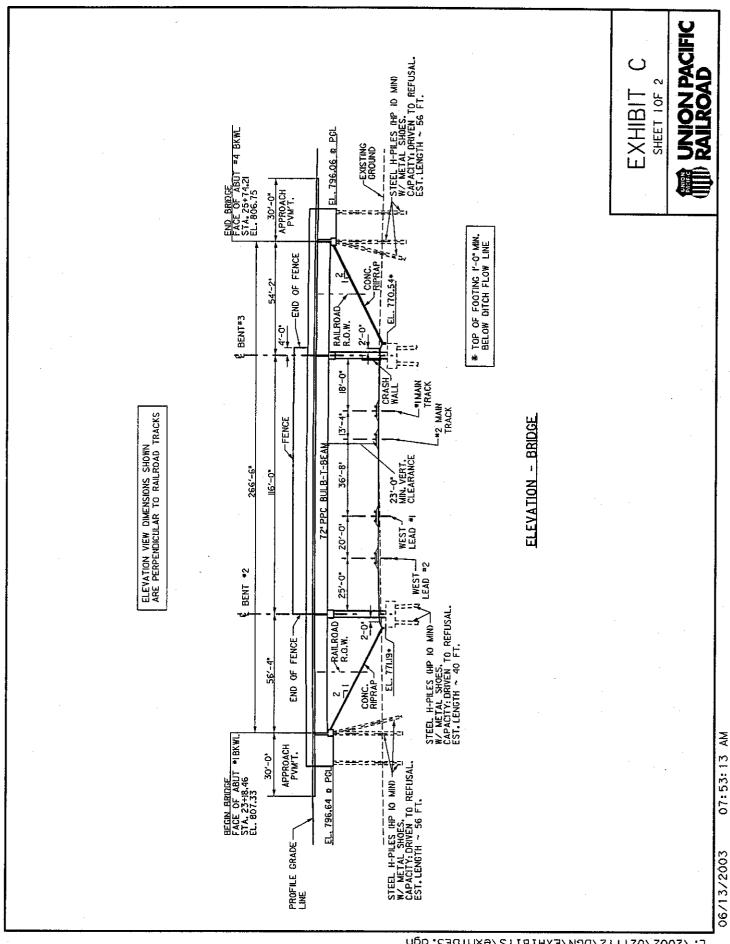
With the existing road configuration, traffic utilizing Brooklyn Road will not have access to the grade separation structure. To maximize the potential safety benefits of the grade separation, an extension to Gurler Road should be constructed from Brooklyn Road to the existing intersection of Grange Road and Gurler Road. This connection will

provide for east west continuity in the area between the UPRR and I-88, and will distribute and direct traffic to the grade separation. The recommended improvements are depicted in schematic form on Exhibit 4.

Closure of the grade crossing at Grange Roads will divert all of the traffic that now uses that crossing to the proposed Thorpe Road overpass. Much of the traffic that now uses the Brush Grove and Brooklyn crossings are also likely to utilize Thorpe Road. Included in this additional traffic will be a significant number of farm implements being moved between fields north and south of the UPRR. Frequently, these vehicles are overwidth, and have difficulty negotiating an overpass in the face of oncoming traffic. It is recommended that the approaches to the overpass include wider than normal shoulders to allow farm implements a safe location to be able to identify and wait for a gap in oncoming traffic.

Preliminary findings of this study were presented at Public Informational Meetings on November 29, 2001 and January 30, 2002. In addition, public comment was received by the Lee County and Ogle County Boards at their regular February meetings. The proposed improvements as outlined herein reflect public comment and subsequent discussions with staff members of the Illinois Commerce Commission, the Ogle and Lee County Engineers, and representatives of the Union Pacific Railroad. We believe there is broad support among local officials as well as members of the general public for the recommended improvements.





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